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## Status of the MUonE experiment

The first measurement of the muon anomalous magnetic moment by the Fermilab g-2 experiment has confirmed the previous intriguing result of the BNL experiment. Their combination brings to  $4.2\sigma$  the discrepancy with the currently accepted prediction of the Standard Model. The dominant theory uncertainty is related to the leading order hadronic vacuum polarization contribution (LO-HVP), determined by a data-driven dispersive approach, using the hadron production cross section in e+e- annihilation. In contrast, a recent ab initio calculation of the LO-HVP contribution, based on Lattice QCD, weakens the discrepancy with the measurement, in some tension with the data-driven estimate.

In this scenario, the novel approach proposed by the MUOnE project aims at a third completely independent and competitive determination of the LO-HVP contribution, achievable with an alternative method based on the measurement of the effective electromagnetic coupling in the space-like region at low momentum transfer. We will discuss the possibility of performing this measurement at CERN by a very precise determination of the shape of the differential muon-electron elastic cross section, exploiting the scattering of 160 GeV muons on atomic electrons of a low-Z target. The project status will be presented, in view of the test run on a reduced detector expected to start at the end of 2021.

## **Collaboration / Activity**

MUonE Collaboration

## **First author**

Email

Primary authors: ABBIENDI, Giovanni (INFN - Bologna); SPEDICATO, Eugenia

Presenter: SPEDICATO, Eugenia

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